Boskalis
Dredging & Marine Experts

PROJECT SHEET

PORT OF POINTE NOIRE, CONGO
DREDGING OF CHANNEL AND TURNING BASIN, RECLAMATION AND PROTECTION OF STORAGE AREA AND EXTENSION OF BREAKWATER

INTRODUCTION

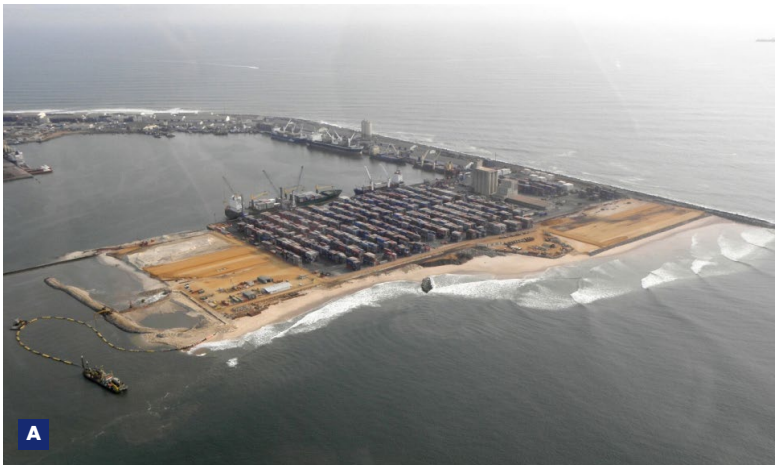
The rehabilitation of the Port of Pointe-Noire focused on the renovation and upgrading of the main infrastructure of the port and its adaptation to developments in containerized traffic, offering a draught of -15 m. Furthermore, the work included the construction of a protective berm, an extension of the external breakwater, the rehabilitation and extension of quays, and dredging work. The projects executed by Boskalis are part of an investment program that consists of multiple phases. Infrastructural upgrades are ongoing within Congo.

The current port upgrade phase consists of the following activities:

- Maintenance and deepening of the channel and turning basin to allow for larger vessels;
- Expanding the area for container storage and protecting the area with slope protection works;
- The installation of a breakwater to deflect the littoral current away from the entrance channel and to act as a sand trap, extending the dredging interval in the channel from 2 to 5 years;
- The installation and extension of additional quay length and the upgrade of the current container quay.

FEATURES

Client	Port Autonome de Pointe-Noire (PAPN)
Location	Congo, Pointe-Noire
Period	March 2011 - July 2013
Contractor	Boskalis International B.V.



A Container terminal extension works
B Profiling eastern revetment
C New breakwater

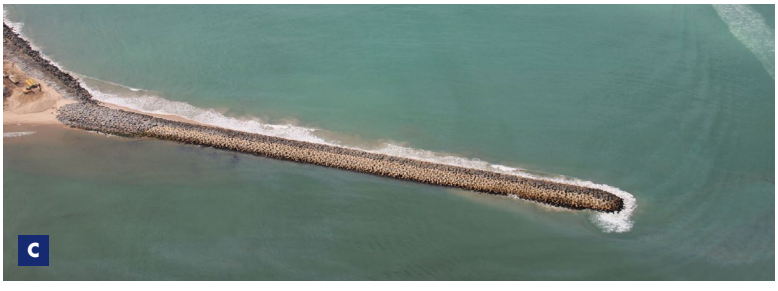
DESIGN AND CONSTRUCT

The scope of the work for Boskalis included capital dredging and the maintenance of the channel and turning basin to increase the navigable depth, the reclamation and protection of additional container storage area, and the installation of the breakwater. The breakwater development and installation was based on a design and construct contract.

The Boskalis engineering department Hydronamic prepared the final design for the breakwater on the basis of a theoretical assessment and 2D and 3D tests consisting of rock and Xblocs.
At the start of the project Boskalis Environmental performed the quality tests on the rock using the in-house laboratory in order to inspect and test whether the rock characteristics met the required specifications.

The main challenges encountered during the projects were:

- The Cutter Suction Dredger (CSD) Nordland encountered tough soil in the channel that was being dredged. With a modified cutter, the CSD was able to dredge the materials.
- The rock production and logistics during the delivery phase, and maintaining consistent concrete quality in local conditions. Proper mitigation and preventive actions allowed Boskalis to maintain high quality.
- Sedimentation in the breaker zone and sea conditions required adaptive and optimized work methods.



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Part of the dredged material was used for land reclamation behind the northern (300m) and eastern (300m) revetments.
The works comprised the construction of a 300m breakwater consisting of rock core and Xbloc armor. Rock was produced in a quarry approximately 80km away from the project site, the same quarry that provided the materials for the two revetments. Xblocs were produced by a local subcontractor.

EQUIPMENT

A customized Caterpillar 385 excavator, the Rockbuster, was used to place rock and Xblocs that were outside the reach of conventional excavators.

The dredging started in March 2011 when the CSD Nordland arrived. Other vessels active on the project were the Trailing Suction Hopper Dredger (TSHD) Argonaut, the TSHD Cornelis Zanen and the multicat BKM100.


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FACTS AND FIGURES

- Dredging works: total quantity dredged 940,000m³, of which 540,000m³ with TSHD, 268,000m³ reclamation behind revetments, 72,000m³ revetment preparation dredging and 60,000m³ tough materials with CSD
- Northern and eastern revetments 2 x 300m with a total of 180,000t of miscellaneous rock gradings being placed
- Breakwater extension 300m with 2,599 pcs Xbloc armor placed on 220,000t of rock core and filter gradings

CONCLUSION

The dredging work started in March 2011 and was finalized in January 2012. The revetment installation commenced in June 2011 and was finalized in November 2012. The construction of the 300m breakwater extension commenced in late November 2011 and was completed in June 2012.
All the work was executed in accordance with the Boskalis quality and safety (SHEQ) framework. Safety awareness was further developed during special training days for staff, covering specific subjects like drills and toolboxes.

Overall, the projects were finalized in good cooperation with corresponding clients, internal departments and within the required timeframes.


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D Rockbuster profiling breakwater
E Reclamation work with CSD Nordland
F TSHD Cornelis Zanen rainbowing
G Profiling slope of Northern revetment

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